

### **REMARKS**

The applicant respectfully requests reconsideration in view of the amendment and the following remarks. The applicant corrected an obvious typographical error with the spelling of triarylamino in claim 1.

Claims 17-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants hereby cancel claims 17-19 and 21-24. Claims 1, 5-8 and 11-16 are rejected under 35 U.S.C. 103(a) as being obvious over Aziz et al., U.S. Patent No. 6,392,339 ("Aziz") in view of Steuber et al (Advanced Materials, vol. 12, no. 2, pp.130-133, 2000) ("Steuber"). Claims 17-19, 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lupo et al. (5,840,217) ("Lupo"). Claims 21-24 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 2 of U.S. Patent No. 5,840,217. The applicant respectfully traverses these rejections.

#### **112 Rejection**

Claims 17-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants hereby cancel claims 17-19 and 21-24. For the above reasons, this rejection should be withdrawn.

#### **103 Rejection**

Claims 1, 5-8 and 11-16 are rejected as being unpatentable over Aziz et al. in view of Steuber. Aziz discloses an organic light-emitting device, which includes a mixed layer

comprising a hole transporting material and an electron transporting material, one of which is an emitter. Aziz discloses triarylamine derivatives as hole transporting material.

As the Examiner correctly recognized in paragraph no. 8 of the Final Office Action, the applicant's claim 1 differs from Aziz in that the hole transporting material used in the emitting layer is a spirobifluorene derivative (see the applicant's claim 1). This has the effect that not only a longer lifetime is achieved, but also a lower driving voltage, as can be seen from the examples in the present application. The technical problem underlying the present invention is therefore to find materials for the emitting layer of an organic light-emitting device, which result both in a longer operational lifetime and in a lower voltage (see the specification at page 1, line 25 through page 2, line 26). This problem is solved by using a hole transporting compound comprising a spirobifluorene unit in the emitting layer (see page 4, lines 22-29 of the specification).

Steuber discloses organic electroluminescent devices comprising spirobifluorene derivatives. Steuber compares the use of simple triarylamine derivatives in the hole transporting layer with the use of spirobifluorene triarylamine derivatives. Steuber concludes that the only effect of the spirobifluorene compound when used in a hole transporting layer is a higher stability due to the higher glass transition temperature. Steuber furthermore states (page 131, column 1, last paragraph) that the electronic properties of the spirobifluorene derivative correspond to those of the monomeric units. The same electronic properties are however expected to lead to the same driving voltage. Steuber does not disclose that the spirobifluorene triarylamine derivatives might be used in **an emitting layer instead** of the **hole transporting layer**. The applicant's claimed invention requires "one emitting layer (EML) which comprises a mixture of at least one hole conductor material and at least one emission material capable of emission, the HOMO of the hole conductor material lying in the range from 4.8 to 5.8 eV (vs.

vacuum) and the compound containing one or more spiro-9,9'-bifluorene units and at least one moiety selected from substituted or unsubstituted diarylamino; triarylamino, carbazole or thiophene units". This is not taught by Steuber. In particular, it is not obvious to one of ordinary skill in the art that the use of the spirobifluorene triarylamine derivatives in the emitting layer instead of the hole transporting layer might result in an improvement of the driving voltage in addition to the improvement of the operational lifetime.

Therefore, a person of ordinary skill in the art would never have considered Steuber when looking for a solution for his technical problem. Claim 1 and dependent claims 5-8 and 11-16 are therefore inventive over Aziz in view of Steuber. Therefore, this rejection should be withdrawn.

**Rejection of claims 17-19 and 21-24**

Claims 17-19, 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lupo. Claims 21-24 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 2 of U.S. Patent No. 5,840,217. In view of the above amendment, applicants believe the pending application is in condition for allowance. In order to expedite prosecution, the applicant has cancelled these claims. For the above reasons, these rejections should be withdrawn.

Applicants believe no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 03-2775, under Order No. 14113-00048-US from which the undersigned is authorized to draw.

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Respectfully submitted,

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